

C12
evaluating the search string by comparing the filled character table bank against
the filled columns of the bit mask; and
generating a search index based on the results of the evaluation. --

REMARKS

Applicants thank Examiner Channavajjala for the courtesies extended during the personal interview on November 1, 2002.

Applicants also thank the Examiner for considering the references cited in the Information Disclosure Statement filed on April 10, 2002 and July 10, 2002, as evidenced by the initialed Form PTO-1449.

Claims 1-32, 37-43 are currently pending in the present application. Claims 1, 2, 9, 10, 12, 18, 25, 26, and 37 are amended. Claim 37 is amended to include the feature of claim 1 as it stood prior to this amendment and to include the features of dependent claims 38 and 39. Claims 33-36, 38, and 39 are cancelled without prejudice or disclaimer. Claims 40-43 are added. An Appendix is attached to this Response showing the marked-up version of changes made to specification and claims.

A separate letter to the draftsman is being filed concurrently with this response.

Reconsideration and allowance of all of the rejected claims are respectfully requested in view of the following remarks.

A petition for extension of time for one month with fee is also filed concurrently herewith.

Drawings

Applicants submit herewith a formal drawing sheet for Figure 1. Applicants also submit proposed drawing corrections to Figures 5 and 6. No new matter has been added by these proposed drawing corrections. Applicants respectfully submit that the corrected figures 5 and 6 further clarify the invention. The Examiner is kindly requested to acknowledge receipt and indicate approval of these drawings in the next Patent Office communication.

Specification

Applicants respectfully submit that the status of the cross-referenced applications has not changed since the previous filings of April 10 and April 11, 2002. Thus, the Examiner is respectfully requested to withdraw the objection. Applicants made a similar request with the preliminary amendment filed on August 28, 2002. Applicants respectfully submit that the Examiner has not indicated in his response (paper no. 21 dated September 27, 2002) whether or not the Applicants' the request has been considered.

Non-Statutory Double Patenting Rejections

Claims 1, 9, 17, and 25 stand provisionally rejected under the judicially created doctrine of obviousness-type double patenting. Applicants respectfully submit that a terminal disclaimer will be executed, if necessary, upon the indication that the claims are otherwise allowable.

Status of the Claims

Claims 2, 10, 18, and 26 have been rejected under 35 U.S.C. 112, second paragraph, as allegedly being indefinite. Claims 1-2, 4-10, 12-18, 20-26, 28-32, and 37 have been rejected under 35 U.S.C. 103 (a) as allegedly being unpatentable over a U.S. Patent Number 5,778, 400 issued to Tateno ("Tateno") in view of U.S. Patent Number 5,946,648 issued to Halstead, Jr. et al. ("Halstead"). Claims 3, 11, 19, and 27, 38, and 39 have been rejected under 35 U.S.C. 103 (a) as allegedly being unpatentable over a U.S. Patent Number 5,778, 400 issued to Tateno in view of Halstead and further in view of U.S. Patent Number 6,321,192 issued to Houchin et al. ("Houchin"). Claims 33-36 have been rejected under 35 U.S.C. 103 (a) as allegedly being unpatentable over a U.S. Patent Number 6,141,656 issued to Ozbutun et al. ("Ozbutun") in view of U.S. Patent Number 5,778,213 issued to Shakib et al. ("Shakib").

Rejection Under 35 U.S.C. §112

Claims 2, 10, 18, and 26 have been rejected under 35 U.S.C. 112, second paragraph, as allegedly being indefinite. Applicants have amended claims 2, 10, 18, and 26 to include the feature of “search string.” Applicants respectfully submit that amended claims 2, 10, 18, and 26 overcome this rejection. Applicants respectfully request the Examiner to remove this rejection.

Rejection Under 35 U.S.C. §103(a)

Claims 1-2, 4-10, 12-18, 20-26, 28-32, and 37 have been rejected under 35 U.S.C. 103 (a) as allegedly being unpatentable over Tateno in view of Halstead. Applicants respectfully traverse this rejection.

In an attempt to advance prosecution, Applicants have amended independent claims 1, 9, 17, and 25 to further clarify the invention. The amended independent claims 1, 9, 17, and 25 include, *inter alia*, the feature of *generating the search index by assigning character sets to a code page, wherein the character sets are assigned based on the results of the evaluation of the characters of the search string and the plurality of pre-determined candidate character sets for the corresponding characters of the search string*, among other things. Support for this feature is found at page 17, lines 5-14 of the specification. At least this feature is not taught or suggested in Tateno and Halstead, alone or in combination with one another.

The Examiner alleges that Tateno discloses a system that generates a search index based on the results of the evaluation of the search string and candidate characters sets (See page 18, lines 12-14 of the September 27, 2002 Office Action). Applicants respectfully submit that Tateno appears to teach tagging reference units in a text file, locating words in the tagged reference units, and generating a search index based on the words and the tagged reference units (See col. 7, lines 45-62 of Tateno). In Tateno, the search index facilitates locating a target word of a search input within the tagged paragraph of the text file (See col. 7, lines 60-65 and Fig. 1 of Tateno). In contrast, the invention is directed to *generating the search index by assigning character sets to a code page, wherein the character sets are assigned based on the results of the evaluation of*

the characters of the search string and the plurality of pre-determined candidate character sets for the corresponding characters of the search string as set forth in independent claims 1, 9, 17, and 25.

A search index is not taught or suggested in Halstead, which the Examiner relies on for disclosing evaluating each character of the search string. Assuming *arguendo* that Halstead teaches evaluating characters of the search sting, Halstead remains deficient because it does not teach or suggest *generating the search index by assigning character sets to a code page, wherein the character sets are assigned based on the results of the evaluation of the characters of the search string and the plurality of pre-determined candidate character sets for the corresponding characters of the search string* as set forth in independent claims 1, 9, 17, and 25.

As a result, Tateno and Halstead, alone or in combination, do not teach or suggest *generating the search index by assigning character sets to a code page, wherein the character sets are assigned based on the results of the evaluation of the characters of the search string and the plurality of pre-determined candidate character sets for the corresponding characters of the search string* as set forth in independent claims 1, 9, 17, and 25. For at least this reason, Applicants respectfully submit that independent claims 1, 9, 17, and 25 are patentable over Tateno in view of Halstead.

Dependent claims 2, 4-8, 10, 12-16, 18, 20-24, 26, and 28-32 each depend from a corresponding one of independent claims 1, 9, 17 and 25 and, therefore, contain the features recited in the independent claims. As mentioned above, the cited references fail to teach or suggest each of the features in the independent claims and, thus, necessarily fail to teach or suggest each of the features in the dependent claims. Therefore, Applicants respectfully submit that claims 2, 4-8, 10, 12-16, 18, 20-24, 26, and 28-32 are also patentable at least by virtue of their dependency.

Claims 3, 11, 19, and 27, 38, and 39 have been rejected under 35 U.S.C. 103 (a) as allegedly being unpatentable over a Tateno in view of Halstead and further in view of Houchin. Applicants respectfully traverse this rejection. Claims 3, 11, 19, 27, 38, and 39 each depend from one of independent claims 1, 9, 17 and 25 and, therefore, contain the features recited in the independent claims. The above deficiencies of Tateno and

Halstead are not overcome by Houchin, which discloses a system and method for comparing characters of a search string against key words in a data structure (See Fig. 3, col.2 lines 20-31, and col. 3, lines 59-64 of Houchin). Thus, Applicants respectfully submit that Tateno, Halstead, or Houchin, alone or in combination, are deficient because they fail to teach or suggest *generating the search index by assigning character sets to a code page, wherein the character sets are assigned based on the results of the evaluation of the characters of the search string and the plurality of pre-determined candidate character sets for the corresponding characters of the search string*. As a result, claims 3, 11, 19, and 27, 38, and 39 are also patentable for at least the foregoing reasons by virtue of their dependency.

Claims 33-36 stand rejected under 35 U.S.C. 103 (a) as allegedly being unpatentable over Ozbutun in view of Shakib. Applicants respectfully disagree with this rejection. In an effort to advance prosecution, however, applicants have cancelled the claims 33-36 without prejudice or disclaimer, thereby rendering moot the rejection of claims 33-36 under 35 U.S.C. 103 (a).

Applicants have amended claim 37 to include the feature of evaluating the search string by comparing each of the characters of the search string to a plurality of pre-determined candidate character sets to determine one or more matches between the plurality of pre-determined candidate character sets and the search string, wherein each of the characters of the search string are compared to one or more character sets of a character bank by parsing the characters of the search string and identifying the one or more character sets of the character bank that express each of the characters of the search string, wherein each of the character sets represented in the character bank that correspond to each of the characters of the search string are compared to pre-selected character set indicators of a bit mask to determine a match between each of the character sets represented in the character bank that correspond to the characters of the search string and the character set indicators of the bit mask, wherein a first column of the character bank corresponds to a first column of the bit mask, and wherein the first column of the character bank and the first column of bit mask correspond to the same character set, among other things. Applicants respectfully submit that at least this feature is not

taught or suggested by the cited references alone or in combinations. For at least this reason, Applicants respectfully submit that claims 37 is patentable over the cited references.

New Claims 40-43 include features of an accepting module that accepts the inputted search string having at least one character; a comparing module that compares the at least one character of the inputted search string to the plurality of pre-determined candidate character sets; a bank filling module that fills the columns of the character table bank to indicate whether or not the at least one character of the string is supported by corresponding pre-determined candidate character sets; a creating module that creates a bit mask comprising columns equivalent in number to the number of columns in the character table bank; a mask filling module that fills the columns of the bit mask to provide an indication of the plurality of pre-determined character sets against which the filled columns of the character table bank are to be matched; an evaluating module that evaluates the search string by comparing the filled character table bank against the filled columns of the bit mask; and an index generating module that generates a search index based on the results of the evaluation. Applicants respectfully submit that these features are not taught or suggested by the cited references alone or in combinations. For at least this reason, Applicants respectfully submit that new claims 40-43 are patentable over the cited references.

RESPONSE TO OFFICE ACTION — PAPER No. 21
U.S. APPLICATION SERIAL No. 09/384,088
ATTORNEY DOCKET No. 23452-092

CONCLUSION

Applicants respectfully submit that this application is in condition for allowance and such disposition is earnestly solicited. If the Examiner believes that a telephone conference or interview would advance prosecution of this application in any manner, the undersigned stands ready to conduct such a conference at the convenience of the Examiner.

It is believed that no other fees are due in connection with filing this Response. In the event that it is determined that fees are due, however, the Commissioner is hereby authorized to charge the undersigned's Deposit Account No. 50-0311, Attorney Docket No. 23452-092.

Respectfully submitted,

Mintz Levin Cohn Ferris Glovsky and Popeo, PC

Dated: January 27, 2003

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**APPENDIX A – VERSION WITH MARKINGS TO SHOW CHANGES MADE IN
THE SPECIFICATION AND THE CLAIMS**

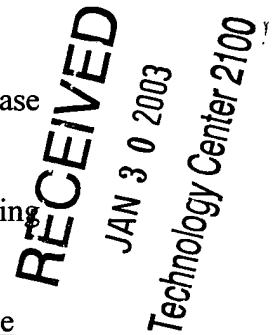
In the Specification:

At page 13, after paragraph ending with “....less than all were matched.” please enter the following amended paragraph:

The function EvaluateTextMessageWithCount invokes the following processing steps, illustrated in Fig. 5. Processing begins in step 300. Characters of a textual message are received in step 322. Character sets are supplied for the characters of the textual message in step 324. In step 302, a bit mask is created from the character sets supplied in the parameter CharSetTestList. Again, this mask has the same correspondence between columns and character sets as the character table bank 110. In step 304, parsing of the textual message 116 is begun. For each character, in step 306 a logical AND is performed between the bit masks of CharSetTestList and the value returned from the character’s row of character table bank 110, in the manner illustrated in Fig. 3.

At page 15, after paragraph ending with “....all were matched (logical 0, failure).,” please amend the paragraph as follows:

The function invokes the following processing steps, illustrated in Fig. 6. Processing begins in step 400. Characters of a textual message are received in step 422. Character sets are supplied for the characters of the textual message in step 424. In step 402, as above a bit mask is created from the character sets supplied in the parameter CharSetTestList. Again, this mask has the same correspondence between columns and character sets as the character table bank 110. In step 404, the parsing of textual message 116 is begun. For each character, in step 406 a logical AND is performed between the bit masks of CharSetTestList and the value returned from the character’s row of character table bank 110. In step 408, the results of the logical AND operation are stored by incrementing a corresponding count for each matching character set in CharSetMatchList. These steps are repeated until the end of the textual message 116 has been reached at the end of message test (as above) of step 410.



In the Claims:

1. **(Twice Amended)** A method of evaluating characters in an inputted search string to generate a search index, comprising the steps of:

- a) accepting an input of the characters of the search string, wherein the characters can be represented in any of a plurality of character sets corresponding to an undetermined language;
- b) evaluating the search string by comparing each of the characters of the search string to a plurality of pre-determined candidate character sets to determine one or more matches between the plurality of pre-determined candidate character sets and the search string; and
- c) generating the [a] search index by assigning character sets to a code page, wherein the character sets are assigned based on the results of the evaluation of the characters of the search string and the plurality of pre-determined candidate character sets that correspond to the characters of the search string.

2. **(Amended)** The method of claim 1, wherein the comparing of step (b) comprises the step of comparing each character of the search string [message] to an entry for each of the candidate character sets in a character table bank.

9. **(Twice Amended)** A system for evaluating characters in an inputted search string to generate a search index, comprising:

an input interface to accept an input of the characters of the search string, wherein the characters can be represented in any of a plurality of character sets corresponding to an undetermined language; and

a processor unit, connected to the input interface, the processor unit evaluating the search string by comparing each of the characters of the search string to a plurality of pre-determined candidate character sets to determine one or more matches between the plurality of pre-determined candidate character sets and the search string, and generating the [a] search index by assigning character sets to a code page, wherein the character sets are assigned based on the results of the evaluation of the characters of the search string

and the plurality of pre-determined candidate character sets that correspond to the characters of the search string.

10. **(Amended)** The system of claim 9, wherein the processor unit compares each character of the search string [message] to an entry for each of the candidate character sets in a character table bank.

17. **(Twice Amended)** A system for evaluating characters in an inputted search string to generate a search index, comprising:

input interface means to accept an input of the characters of the search string, wherein the characters can be represented in any of a plurality of character sets corresponding to an undetermined language; and

processor means, connected to the input interface means, the processor means evaluating the search string by comparing each of the characters of the search string to a plurality of pre-determined candidate character sets to determine one or more matches between the plurality of pre-determined candidate character sets and the search string, and generating the [a] search index by assigning character sets to a code page, wherein the character sets are assigned based on the results of the evaluation of the characters of the search string and the plurality of pre-determined candidate character sets that correspond to the characters of the search string.

18. **(Amended)** The system of claim 17, wherein the processor means compares each character of the search string [message] to an entry for each of the candidate character sets in a character table bank.

25. **(Twice Amended)** A storage medium for storing machine readable code, the machine readable code being executable to evaluate characters in an inputted electronic search string according to the steps of:

a) accepting an input of the characters of the search string, wherein the characters can be represented in any of a plurality of character sets corresponding to an undetermined language;

b) evaluating the search string by comparing each of the characters of the search string to a plurality of pre-determined candidate character sets to determine one or more matches between the plurality of pre-determined candidate character sets and the search string; and

c) generating the [a] search index by assigning character sets to a code page, wherein the character sets are assigned based on the results of the evaluation of the characters of the search string and the plurality of pre-determined candidate character sets that correspond to the characters of the search string.

26. **(Amended)** The storage medium of claim 25, wherein the comparing of step (b) comprises the step of comparing each character of the search string [message] to an entry to each of the candidate character sets in a character table bank.

33. **(Cancelled)**

34. **(Cancelled)**

35. **(Cancelled)**

36. **(Cancelled)**

37. **(Amended)** A method of evaluating characters in an inputted search string to generate a search index, comprising the steps of:

a) accepting an input of the characters of the search string, wherein the characters can be represented in any of a plurality of character sets corresponding to an undetermined language;

b) evaluating the search string by comparing each of the characters of the search string to a plurality of pre-determined candidate character sets to determine one or more matches between the plurality of pre-determined candidate character sets and the search string [The method of claim 1], wherein [the evaluating step compares] each of the characters of the search string are compared to one or more character sets of a character bank by parsing the characters of the search string and identifying the one or more character sets of the character bank that express each of the characters of the search

string, wherein each of the character sets represented in the character bank that correspond to each of the characters of the search string are compared to pre-selected character set indicators of a bit mask to determine a match between each of the character sets represented in the character bank that correspond to the characters of the search string and the characters set indicators of the bit mask, wherein a first column of the character bank corresponds to a first column of the bit mask, and wherein the first column of the character bank and the first column of bit mask correspond to the same character set; and

c) _____ generating a search index based on the results of the evaluation of the search string and the plurality of pre-determined candidate character sets.

38. **(Cancelled)**

39. **(Cancelled)**

40. **(New)** A method of evaluating characters in an inputted search string against a character table bank comprising a predetermined number of columns that correspond to a plurality of pre-determined candidate character sets in order to provide enhanced full text search features, the method comprising:

accepting the inputted search string having at least one character;

comparing the at least one character of the inputted search string to the plurality of pre-determined candidate character sets;

filling the columns of the character table bank to indicate whether or not the at least one character of the string is supported by corresponding pre-determined candidate character sets;

creating a bit mask comprising columns equivalent in number to the number of columns in the character table bank;

filling the columns of the bit mask to provide an indication of the plurality of pre-determined character sets against which the filled columns of the character table bank are to be matched;

evaluating the search string by comparing the filled character table bank against the filled columns of the bit mask; and

generating a search index based on the results of the evaluation.

41. (New) A system for evaluating characters in an inputted search string against a character table bank comprising a predetermined number of columns that correspond to a plurality of pre-determined candidate character sets in order to provide enhanced full text search features, the system comprising:

an accepting module that accepts the inputted search string having at least one character;

a comparing module that compares the at least one character of the inputted search string to the plurality of pre-determined candidate character sets;

a bank filling module that fills the columns of the character table bank to indicate whether or not the at least one character of the string is supported by corresponding pre-determined candidate character sets;

a creating module that creates a bit mask comprising columns equivalent in number to the number of columns in the character table bank;

a mask filling module that fills the columns of the bit mask to provide an indication of the plurality of pre-determined character sets against which the filled columns of the character table bank are to be matched;

an evaluating module that evaluates the search string by comparing the filled character table bank against the filled columns of the bit mask; and

an index generating module that generates a search index based on the results of the evaluation.

42. (New) A system for evaluating characters in an inputted search string against a character table bank comprising a predetermined number of columns that correspond to a plurality of pre-determined candidate character sets in order to provide enhanced full text search features, the system comprising:

accepting means that accepts the inputted search string having at least one character;

comparing means that compares the at least one character of the inputted search string to the plurality of pre-determined candidate character sets;

bank filling means that fills the columns of the character table bank to indicate whether or not the at least one character of the string is supported by corresponding pre-determined candidate character sets;

creating means that creates a bit mask comprising columns equivalent in number to the number of columns in the character table bank;

mask filling means that fills the columns of the bit mask to provide an indication of the plurality of pre-determined character sets against which the filled columns of the character table bank are to be matched;

evaluating means that evaluates the search string by comparing the filled character table bank against the filled columns of the bit mask; and

index generating means that generates a search index based on the results of the evaluation.

43. (New) A storage medium for storing machine readable code, the machine readable code being executable to evaluate characters in an inputted search string against a character table bank comprising a predetermined number of columns that correspond to a plurality of pre-determined candidate character sets in order to provide enhanced full text search features, the method comprising:

accepting the inputted search string having at least one character;

comparing the at least one character of the inputted search string to the plurality of pre-determined candidate character sets;

filling the columns of the character table bank to indicate whether or not the at least one character of the string is supported by corresponding pre-determined candidate character sets;

creating a bit mask comprising columns equivalent in number to the number of columns in the character table bank;

filling the columns of the bit mask to provide an indication of the plurality of pre-determined character sets against which the filled columns of the character table bank are to be matched;

evaluating the search string by comparing the filled character table bank against the filled columns of the bit mask; and

generating a search index based on the results of the evaluation.

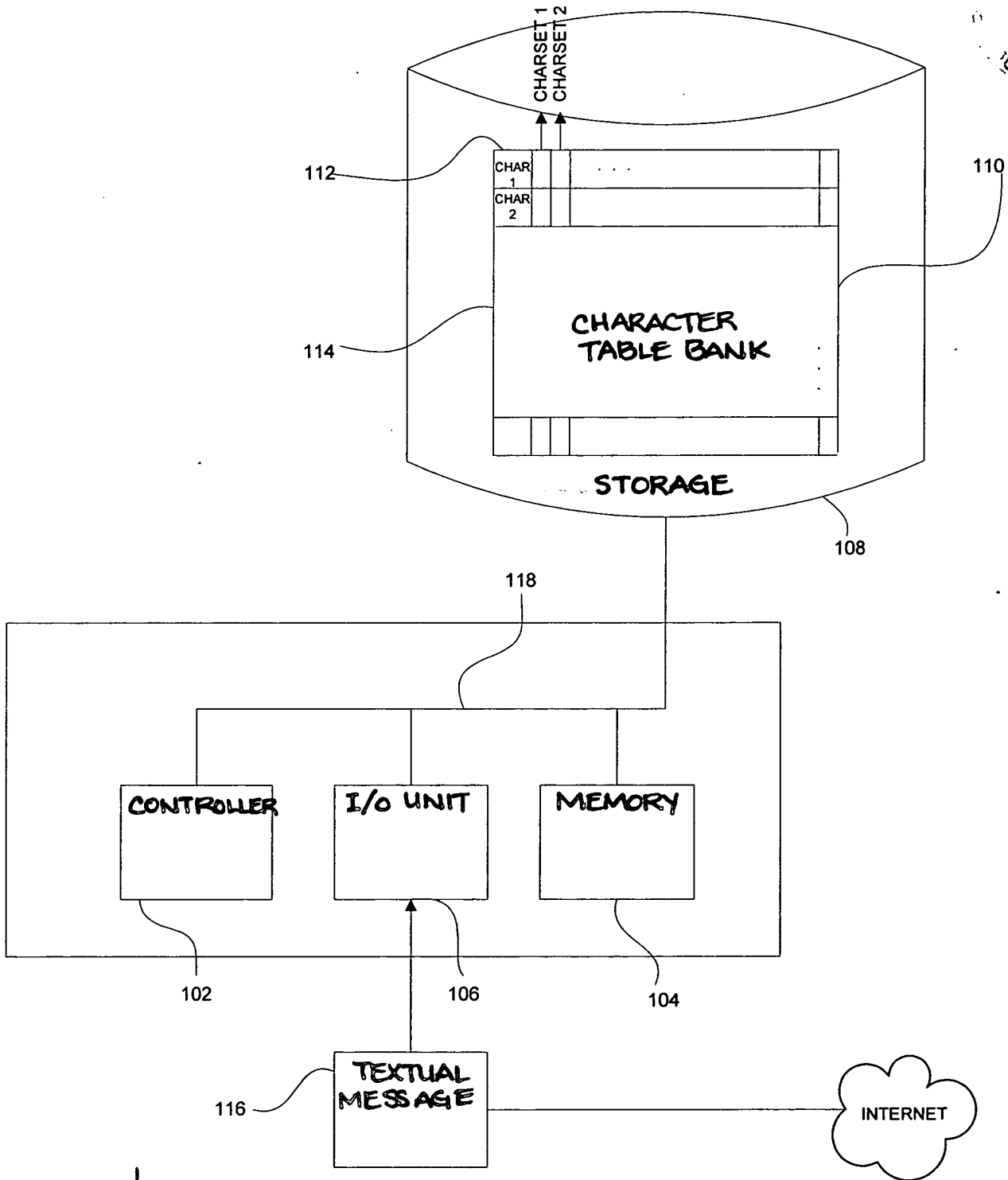


FIG. 1

mmmd
5/15/2002

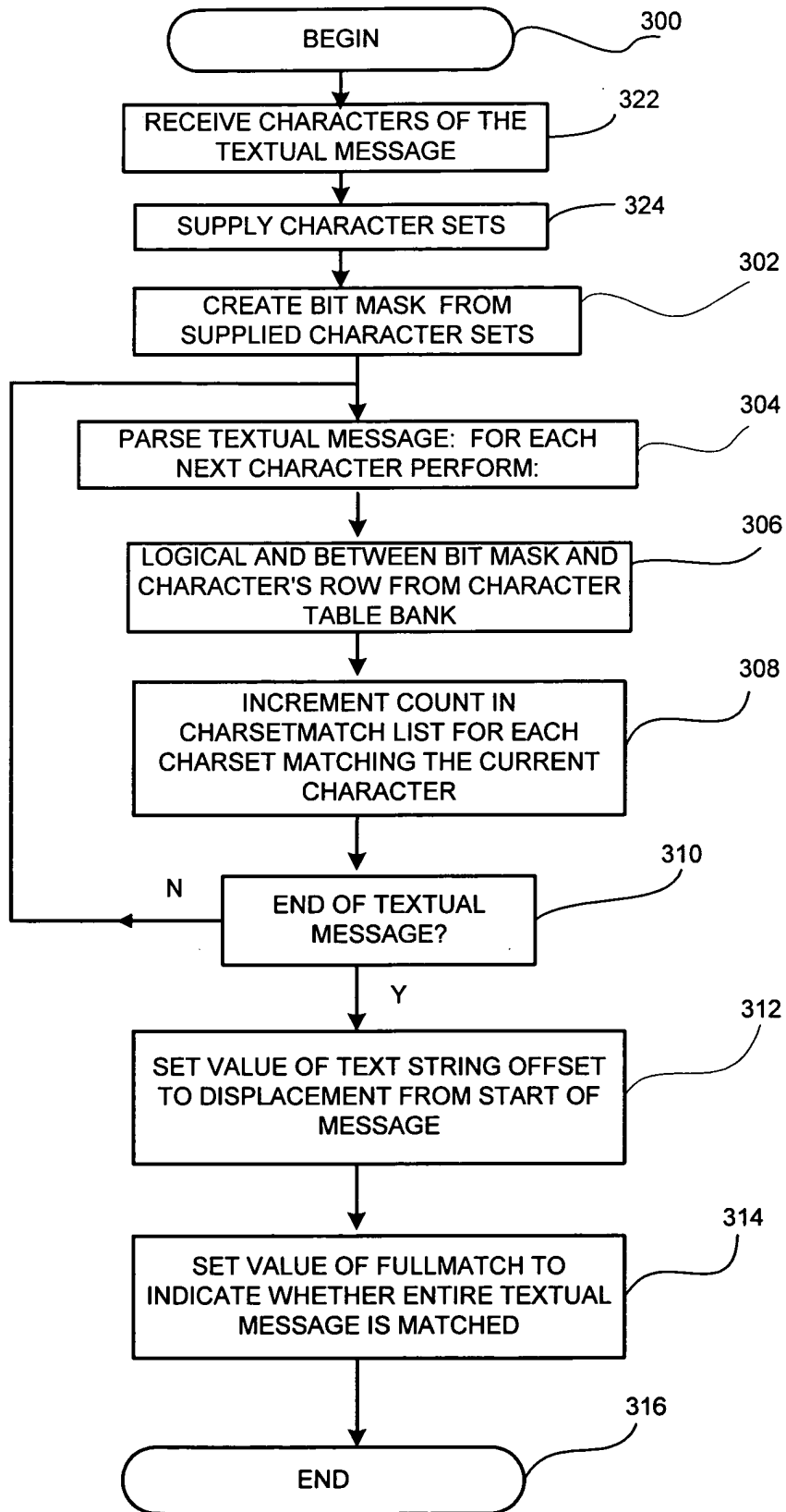
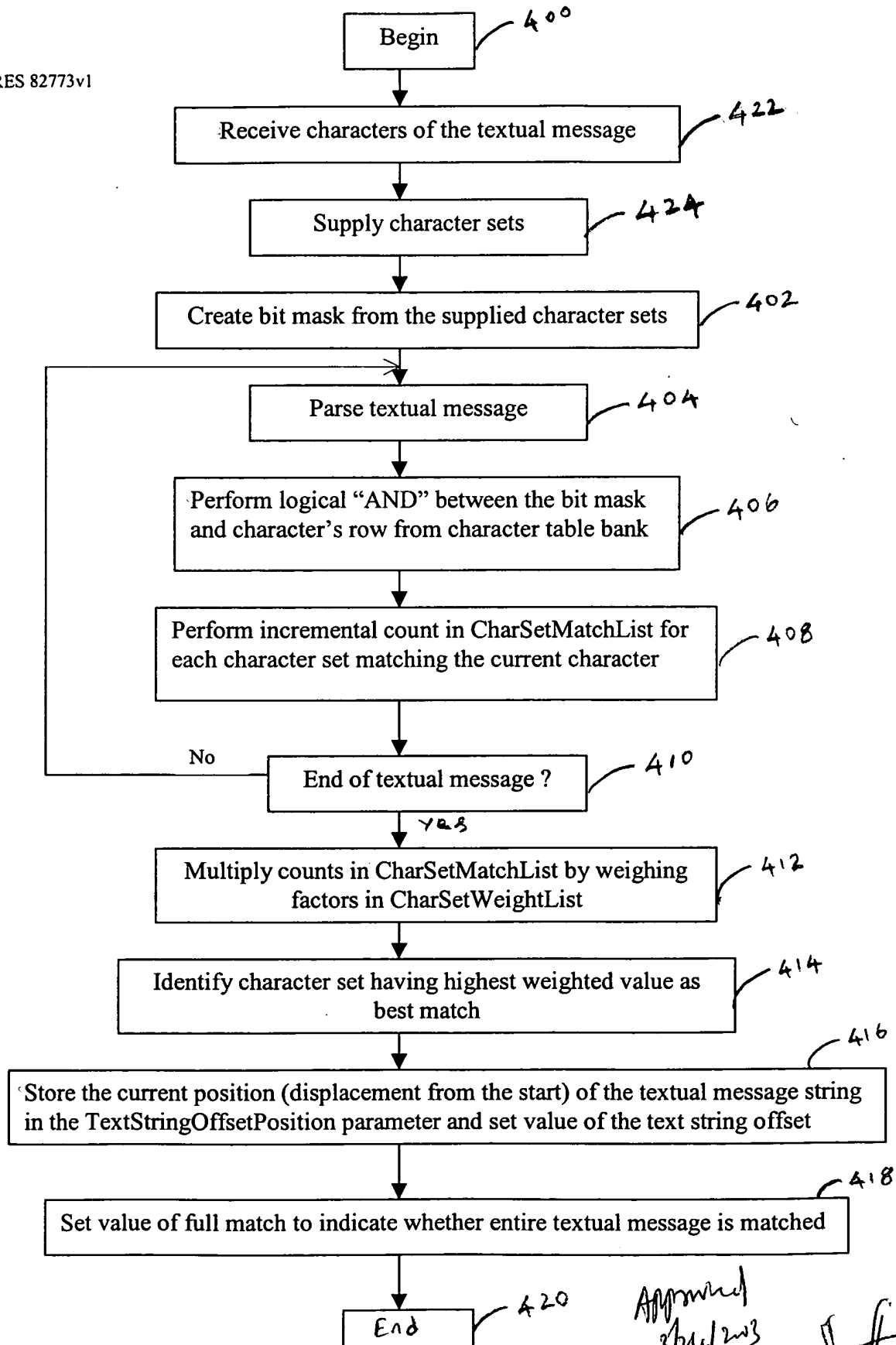


FIG. 5

Approved
3/24/2003
[Signature]



RES 82773v1



Approved
3/24/2003
fig 6